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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,453	03/31/2004	Ricardo E. Gonzalez	PA2718US	7783

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EXAMINER	
MCLEOD, MARSHALL M	
ART UNIT	PAPER NUMBER
2457	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/815,453	GONZALEZ ET AL.	
	Examiner	Art Unit	
	MARSHALL MCLEOD	2457	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 June 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26 and 81-89* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26 and 81-89* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *06/29/2009*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-26, and 81-89 are pending in this application.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. **Claims 1-6, 8-10, 12-19, 21-23, 25-26, and 81-89 are rejected under 35 U.S.C. 103(a) as being unpatentable over Isfeld et al. (Patent No US 5,828,835), hereinafter Isfeld, in view of Hagsand et al. (Patent No US 7,254,142 B2), hereinafter Hagsand and further in view of Chuprun et al. (Patent No US 6,115,580), hereinafter Chuprun.**

3. With respect to claim 1, Isfeld discloses accepting the channel in the destination processing node (Column 3, lines 1-4); allocating a transmit buffer for the channel in the source processing node (Column 4, lines 29-35; i.e. messages to be transmitted on the connectionless communication link can be interpreted as allocating a transmit buffer for the channel); allocating a receive buffer for the channel in the destination processing node (Column 4, lines 11-17); writing data from a source processing element to the transmit buffer (Column 3, lines 40-48); transmitting the data from the transmit buffer over the channel using a source network interface

in the source processing node (Column 2, lines 40-45); receiving the data over the channel into the receive buffer using a destination network interface in the destination processing node (Column 4, lines 11-17); reading in the data from the receive buffer into the destination processing element (Column 4, lines 11-17).

Isfeld does not disclose a method of communicating data between a plurality of processing nodes, the method comprising: determining a route for a unidirectional channel from a source processing node to a destination processing node within the array of processor nodes, the determined route based on a physical description of the array of processor nodes; generating the unidirectional channel along the determined route from the source processing node to the destination processing node, the channel having a bandwidth requirement.

However, Hagsand discloses the channel that has bandwidth requirement (Column 3, lines 42-43).

It would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the teachings of Isfeld with the teachings of Hagsand in order to speed up or reduce the transfer of data by specifying that the system bandwidth meet certain requirements.

The combination of Isfeld and Hagsand does not disclose a method of communicating data between a plurality of processing nodes, the method comprising: determining a route for a unidirectional channel from a source processing node to a destination processing node within the

array of processor nodes, the determined route based on a physical description of the array of processor nodes; generating the unidirectional channel along the determined route from the source processing node to the destination processing node.

However, Chuprun discloses a method of communicating data between a plurality of processing nodes (Column 1, lines 13-15), the method comprising: determining a route for a unidirectional channel from a source processing node to a destination processing node within the array of processor nodes, the determined route based on a physical description of the array of processor nodes (Column 2, lines 1-23); generating the unidirectional channel along the determined route from the source processing node to the destination processing node (Column 5, lines 63-67 and continued through to Column 6, lines 1-12).

It would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the combined teachings of Isfeld and Hagsand with the teachings of Chuprun, in order to improving connectivity and throughput in a wireless communications network (Chuprun; Column 2, lines 24-26).

4. With respect to claim 14, Isfeld discloses a source processing node (Column 37, Claim 1), allocate a transmit buffer for the unidirectional channel, and write data to the transmit buffer for the unidirectional channel (Column 12, lines 26-48), and a source network interface (Column 12, lines 11-18), configured to transmit the data from the transmit buffer of the source processing node over the unidirectional channel (Column 2, lines 40-45); and a destination processing node

(Column 4, lines 11-17), a destination processing element configured to accept the unidirectional channel, allocate a receive buffer for the channel in the destination processing node, and receive the data from the receive buffer (Column 4, lines 11-17), a destination network interface (Column 8, lines 50-52) configured to receive the data into the receive buffer for the unidirectional channel (Column 4, lines 11-17)

Isfeld does not disclose the unidirectional channel having a bandwidth requirement and generated by the source processing element along a route, the route and the bandwidth requirement based on one or more tasks associated with the destination processing node, and the source processing node and destination processing node included within an array of processing nodes.

However, Hagsand discloses a channel that has bandwidth requirement (Column 3, lines 42-43).

It would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the teachings of Isfeld with the teachings of Hagsand in order to speed up or reduce the transfer of data by specifying that the system bandwidth meet certain requirements.

The combination of Isfeld and Hagsand does not disclose generated by the source processing element along a route, the route and the bandwidth requirement based on one or more tasks associated with the destination processing node, and the source processing node and destination processing node included within an array of processing nodes.

However, Chuprun discloses generated by the source processing element along a route, the route and the bandwidth requirement based on one or more tasks associated with the destination processing node, and the source processing node and destination processing node included within an array of processing nodes (Column 2, lines 1-23).

It would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the combined teachings of Isfeld and Hagsand with the teachings of Chuprun, in order to improving connectivity and throughput in a wireless communications network (Chuprun; Column 2, lines 24-26).

5. With respect to claims 2 and 15, Isfeld discloses wherein the unidirectional channel is associated with a first task executing on the source processing element and a second task executing on the destination processing element (Column 12, lines 49-57).

6. With respect to claims 3 and 16, Isfeld discloses wherein the unidirectional channel is associated with a first port in the source processing element and a second port in the destination processing element (Column 41; Claim 41, lines 21-32).

7. With respect to claims 4 and 17, Isfeld discloses the size of buffers (Column 20, lines 12-18). Isfeld does not disclose wherein the unidirectional channel has a maximum number of

buffers. However, Hagsand discloses wherein the unidirectional channel has a maximum number of buffers (Column 4, lines 17-24).

8. With respect to claims 5 and 18, Isfeld does not disclose reserving intermediate resources for the unidirectional channel based on the bandwidth requirements. However, Hagsand discloses reserving intermediate resources for the unidirectional channel based on the bandwidth requirements (Column 2, lines 63-67 and continued through to Column 3, lines 1-15).

9. With respect to claims 6 and 19, Isfeld does not disclose guaranteeing bandwidth based on the bandwidth 5 requirements using time division multiplexing. However, Hagsand discloses guaranteeing bandwidth based on the bandwidth requirements using time division multiplexing (Column 2, lines 38-44).

10. With respect to claims 8 and 21, Isfeld discloses polling a plurality of channels to check if data is received into the receive buffer for the unidirectional channel (Column 12, lines 44-50; i.e. …hardware keeps state information which can be interpreted that the hardware checks if the channel has received data i.e. polling).

11. With respect to claims 9 and 22, Isfeld discloses freeing the transmit buffer (Column 34, lines 52-54).

12. With respect to claims 10 and 23, Isfeld discloses freeing the receive buffer (Column 38; Claim 11, line 36).

13. With respect to claims 12 and 25, Isfeld discloses receiving a pointer for the data in the receive buffer into the destination processing element and wherein receiving the data from the receive buffer is based on the pointer (Column 12, lines 40-48).

14. With respect to claims 13 and 26, Isfeld discloses wherein a time for a receive call in the destination processing element does not depend upon a size of the data (Column 2, line 40-50).

15. With respect to claim 81, neither Isfeld nor Hagsand discloses receiving the first task in the source processing node, wherein the step of generating a channel is performed in response to receiving the first task.

However, Chuprun discloses receiving the first task in the source processing node, wherein the step of generating a channel is performed in response to receiving the first task (Column 6, lines 1-12).

16. With respect to claim 82, neither Isfeld nor Hagsand discloses determining a topology of processing nodes to process one or more tasks, the topology including the channel.

However, Chuprun discloses determining a topology of processing nodes to process one or more tasks, the topology including the channel (Column 7, lines 11-22).

17. With respect to claim 83, Isfeld discloses receiving a response signal from the destination processing node by the source processing node (Column 9, lines 49-59).

18. With respect to claim 84, neither Isfeld nor Hagsand discloses assigning tasks to one or more nodes in the array of nodes, wherein said step of generating the unidirectional channel is performed in response to said step of assigning tasks.

However, Chuprun discloses assigning tasks to one or more nodes in the array of nodes, wherein said step of generating the unidirectional channel is performed in response to said step of assigning tasks (Column 2, lines 1-17).

19. With respect to claim 85, neither Isfeld nor Hagsand discloses wherein the route for the unidirectional channel is further based on a physical description of the multi-processor system.

However, Chuprun discloses wherein the route for the unidirectional channel is further generated based on a physical description of the multi-processor system (Column 5, lines 37-52).

20. With respect to claim 86, neither Isfeld nor Hagsand discloses wherein a compiler is configured to determine routing information for one or more channels and assign a task to one or more destination processing nodes.

However, Chuprun discloses wherein a compiler is configured to determine routing information for one or more channels and assign a task to one or more destination processing nodes (Column 3, lines 22-41).

21. With respect to claim 87, neither Isfeld nor Hagsand discloses wherein the transmit buffer and receive buffer are allocated based on the one or more tasks and a physical description of a portion of the array of nodes over which the data is to be transmitted.

However, Chuprun discloses wherein the transmit buffer and receive buffer are allocated based on the one or more tasks and a physical description of a portion of the array of nodes over which the data is to be transmitted (Column 5, lines 37-52).

22. With respect to claim 88, neither Isfeld nor Hagsand discloses wherein determining a route for a unidirectional channel is based on an application description.

However, Chuprun discloses wherein determining a route for a unidirectional channel is based on an application description (Column 6, lines 13-21).

23. With respect to claim 89, neither Isfeld nor Hagsand discloses wherein generating the unidirectional channel along the determined route is based on an allocated communication bandwidth between a first task on the source processing node and a second task on the destination processing node.

However, Chuprun discloses wherein generating the unidirectional channel along the determined route is based on an allocated communication bandwidth between a first task on the source processing node and a second task on the destination processing node (Column 6, lines 13-26).

24. **Claims 7 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Isfeld, in view of Hagsand, in view of Chuprun and further in view of Plante (Pub. No US 2004/0208602 A1).**

25. With respect to claims 7 and 20, Isfeld does not disclose guaranteeing bandwidth based on the bandwidth requirements using spatial division multiplexing. However, Plante discloses guaranteeing bandwidth based on the bandwidth requirements using spatial division multiplexing (Page 18; [0210], lines 1-8). It would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the teachings of Isfeld with the teachings of Plante in order to transmit independent and separately encoded data signals using the current channel and specified bandwidth requirement put in place.

26. **Claims 11 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Isfeld, in view of Hagsand, in view of Chuprun and further in view of Pitts (Patent No US 6,505,241 B2).**

With respect to claims 11 and 24, Isfeld does not disclose destroying the unidirectional channel. However, Pitts discloses destroying the unidirectional channel (Column 30, line 32).

Response to Arguments

27. Applicant's arguments filed 03 June 2009 have been fully considered but they are not persuasive. In regards to applicant's arguments containing prior art Deri, applicant's arguments are now moot as the examiner no longer relies on the teachings of Deri.

28. With respect to applicant's arguments on page 20 of the instant remarks. Applicant's contend that Hagsand does not teach "reserving intermediate resources for the unidirectional channel based on the bandwidth requirements". The examiner respectfully disagrees and states to applicant's that, applicant's claim of reserving intermediate resources based on bandwidth requirements is very broad, as intermediate resources may change as bandwidth requirements can change and as such the examiner interprets (Column 2, lines 63-67 and continued through to Column 3, lines 1-15) of Hagsand to disclose applicant's claimed limitation. As the cited portion of Hagsand discloses ". . . if the traffic flow is increased, more bandwidth may be allocated to the channel 100 and if the traffic flow is decreased, the allocated bandwidth may be reduced . . ." which the examiner interprets as reserving intermediate resources for the unidirectional channel based on the bandwidth requirements.

29. With respect to applicant's arguments on page 21 of the instant remarks. Applicant's contend that Hagsand does not teach "guaranteeing bandwidth based on the bandwidth requirements using time division multiplexing". The examiner respectfully disagrees and states to applicant's that, the cited portion of Hagsand which discloses "almost guaranteed" and applicant's "guaranteeing bandwidth" is equivalent. The examiner states to applicant's that there is no 100% guarantee in bandwidth allocations as there may be errors, failures and other technical issues which may arise and as such, bandwidth allocation is "almost guaranteed" at best.

30. With respect to applicant's arguments on page 22 of the instant remarks. Applicant's contend that Isfeld does not teach "polling a plurality of channels to check if data is received into the receive buffer for the unidirectional channel". The examiner respectfully disagrees and states to applicant's that, the cited portion above in conjunction with (Column 12, lines 58-66), which states "Buffers . . . are either invalid because they contain data from previously received messages yet to be processed, are in use by a particular channel, or . . .". Further clarifies Isfeld teaching the claimed limitation of applicant's invention.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARSHALL MCLEOD whose telephone number is (571)270-3808. The examiner can normally be reached on Monday - Thursday 6:30 a.m-4:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ario Etienne can be reached on (571) 272-4001. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ramy M Osman/
Primary Examiner, Art Unit 2457

/Marshall McLeod/
Examiner, Art Unit 2457
8/10/2009